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May 21, 1993

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
Suite 222
1919 M Street, N.W.
Washington, D.C. 20554

RE: Inner Ear Communications, Inc.
Petition for Rulemaking

Dear Ms. Searcy:

On behalf of Inner Ear Communications, Inc., we are filing herewith an original and nine copies of its Petition for Rulemaking. The Petition requests amendment of Part 90 of the Rules to provide for use of certain low power frequencies in the 72-76 MHz band for the one-on-one transmission of information to spectators of sporting and other public events.

Should any questions arise concerning this filing, please communicate with this office.

Very truly yours,

Richard Hildreth

Richard Hildreth
Counsel for
Inner Ear Communications, Inc.

LMT/bll
Enclosures

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90	)	
of the Commission's Rules	)	RM-_____
To Provide for the Use of	)	
Certain Low Power Frequencies	)	
in the 72-76 MHz Band for	)	
the Transmission of	)	
Information to Individual	)	
Spectators of Sporting and	)	
Other Public Events	)	

To: The Commission

PETITION FOR RULE MAKING

Richard Hildreth
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May 21, 1993

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SUMMARY

Inner Ear Communications, Inc. d/b/a One-On-One Sports ("Inner Ear") hereby petitions the Commission to amend Part 90 of its Rules to allow the use of certain low power frequencies in the 72-76 MHz band by Business Radio Service eligibles for the limited purpose of transmitting information to spectators at sporting and other public events. Inner Ear has developed a closed-circuit, low power radio transmission system for providing audio information to spectators attending events, such as golf tournaments, horse races, car races, major college football games and other public events. Inner Ear has been testing the system at sporting events for the past year. The system has been well-received by spectators at the events, who have welcomed the opportunity to obtain real time information regarding the events they are attending.

The public interest would be served by the grant of the petition. The petitioner's marketing tests have shown that there is substantial public demand for the proposed new service. The new service would involve the use of, among other new equipment and technologies, a specially developed radio receiver with novel features, such as the ability to operate on any of thirty low power frequencies in the 72-76 MHz band, a timing circuit that limits the period of the operation of the receiver, and a re-set switch that makes the receivers operational again for the next event.

There would be no public detriment. The frequencies sought are available and are used for low power operations. The petitioner's operations would also be low power (not to exceed 1 watt) and would be fully compatible with currently authorized systems. Moreover, from a frequency use standpoint, the petitioner plans to coordinate its operations fully and will take additional steps to prevent interference. The substantial experimental operations conducted thus far encountered no interference situations.

Therefore, the public interest would be well-served by the Commission initiating the requested rulemaking proceeding.

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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

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Certain Low Power Frequencies	)	
in the 72-76 MHz Band for	)	
the Transmission of	)	
Information to Individual	)	
Spectators of Sporting and	)	
Other Public Events	)	

To: The Commission

PETITION FOR RULE MAKING

Inner Ear Communications, Inc. d/b/a One-On-One Sports ("Inner Ear"), by its attorneys, hereby petitions the Commission, pursuant to Section 1.401 of the Commission's Rules, to amend Part 90 of its Rules to allow the use of certain low power frequencies in the 72-76 MHz band in the Business Radio Service for the limited purpose of transmitting information to spectators at sporting and other public events. In support whereof, the following is shown.

I. INTRODUCTION.

Inner Ear has developed a closed-circuit, low power radio transmission system, named "One-On-One," for providing audio information to spectators attending sporting and other public events, such as golf tournaments, horse races, car races, football games, or conventions. Inner Ear has tested its One-On-One system at several sporting events over the past year, and has

found it to be extremely well-received by spectators at the events, who have welcomed the opportunity to receive real time information and other relevant data regarding the event they are attending.

The One-On-One system represents a new and unique application of radio. The system uses not only a specially designed radio receiver to ensure good reception, but the receiver will also contain a timing circuit, limited access reset switch, and a battery monitoring device. Further, the receivers are capable of being operated on 30 frequencies that can be segmented into groups of five or six frequencies for simultaneous transmission of information regarding several parts of a sporting event, or in several languages, without interference. Therefore, the One-On-One system offers the opportunity for a new radio service and advances the state-of-the-art for radio equipment. Accordingly, Inner Ear submits that granting its Petition would be in the public interest.[1]

II. DESCRIPTION OF THE ONE-ON-ONE SYSTEM.

As noted above, Inner Ear's One-On-One system is a closed-circuit, over-the-air, low power radio service addressed to spectators present at various sporting and other public events.[2] The system provides attendees audio information, including a

---

[1] Inner Ear is simultaneously filing a request for a pioneer's preference.

[2] Inner Ear has pending patent applications for the system and for the receiver used in the system.

running account of the event, that greatly enhances their enjoyment of the event.[3] In many instances, the activity being described is out of the sight of the spectator; for example, various golfers' shots at golf matches.

A. Experimental Operations.

Inner Ear has held an experimental license (KK2XJR, File No. 2488-EX-PL-92) authorizing the operation of its One-On-One system on certain frequencies in the 72-76 MHz band. Through its experimental license, Inner Ear has been extensively testing the technical and marketing aspects of its system at various sporting events, including the Ameritech Seniors Open, the Vantage Championship, Churchill Downs, Doral Open, and the MCI Heritage Classic. As part of its efforts, and since an off-the-shelf receiver is not available for this unique use, Inner Ear has had to work with numerous RF designers and engineers to achieve the design of a receiver that meets the demanding Inner Ear technical and operational requirements, and is also low in cost.

As a result of its efforts, Inner Ear's experimental operations have now demonstrated that the "One-On-One" system is technically feasible. Also of importance is that the service was well-received by sports spectators and others associated with the events in which the system was tested. In fact, the service received enthusiastic customer acceptance.

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[3] In addition to the transmission of the primary sporting activity, important news, local traffic, and weather information can also be delivered to the attendees.

B. The System.

The system is a portable, low-power transmitting facility which will transmit a low power signal on one or more predetermined frequencies in the 72-76 MHz range that would be received within a limited geographical area, such as a football stadium, horse race track, golf course, or convention complex. Spectators who wish to receive the service will be able to obtain a receiver at the event from Inner Ear. The length of time that a spectator would be able to use the receiver is controlled by a timing device in the receiver, which device can only be reset by the One-On-One system operator at the event. The receivers would be returned to the operator at the end of the event.

1. Receivers.

The program material will be provided to the spectators only through the special receiving equipment. The receivers are similar to "pocket" FM broadcast receivers equipped with earpieces, so that various other nearby spectators are not disturbed. The receivers are made available to the spectators at distribution sites at the event, either on a rental basis or free of charge.

The receivers are capable of operating on any of 30 frequencies. In this way, simultaneous coverage of various parts of a sporting event can be achieved. Additionally, coverage of other sporting events can be transmitted to spectators attending one event, but who desire to follow other events, such as during NCAA basketball play-off tournaments. Where appropriate,

different languages describing the event can be used.

As noted above, the receiver can be used only for a limited period of time. This is achieved by a timing oscillator in its circuit board which runs for a predetermined period of time and then renders the unit inoperable until the timer is reset. In this way, spectators are discouraged from keeping the receivers. To ensure that the receiver is adequately powered, the receiver also has a battery monitor, which detects the condition of the battery and thus helps the operator assure that the user can utilize the receiver for the duration of the event.

2. Transmitter.

The required Inner Ear transmitter specifications are as follows:

Output Power (nominal)	1.0 watts
Emission Designator	20K0F3E
Polarization	Vertical
ERP (maximum)	1.0 watts
Deviation for 100% Modulation	4.5 kHz
Occupied Bandwidth	20 kHz
Modulating Signal	Audio
Audio Filter per	90.211(d)(1)(i)

3. Transmitting Antenna.

The transmitting antenna(s) will produce an ERP of approximately one watt. The antenna(s) will be mounted on a structure within the complex where the event is to be held (e.g., the press box, clubhouse, stadium wall) or on a pole[4]. In no event would the height of the antenna exceed the structure on

[4] Where a pole is used, all height limitations will be complied with.

which it is mounted by more than 20 feet. In the event that the structure is one subject to FAA/FCC notification and authorization, the temporary antenna would be so installed as not to exceed the existing overall height of the structure.

4. Production and Transmission.

The program production system utilizes state-of-the-art facilities, including equipment for audio tape playback of recorded material for insertion of external feeds (from outside sources) and field reports. Staffing for a typical golf tournament would include six on-course "reporters," stationed at various locations around the course, and one or more "anchors." Field reports from these reporters will be transmitted to the base by ordinary mobile radio equipment.

The mixed audio program is fed to an audio processor and then directly into the transmitter. The transmitter output feeds a calibrated attenuator (to adjust RF output level) and a power amplifier. The RF output power is monitored to ensure compliance with that authorized by the Commission. Continuous monitoring of the "on-air" signal is accomplished by the use of a programmable scanner.

5. Frequencies Used and Frequency Coordination.

In the experimental program, the frequencies earmarked for low-power mobile use in the 72-76 MHz band have proven well-suited for the One-On-One system. One or more frequencies would be selected for use at each location. They would be coordinated prior to use to assure that there will be no interference to

other users of those frequencies. Coordination would be primarily conducted via computer review of the FCC database, to identify authorized users in the particular geographic location, and by in-the-field monitoring of all of the low power 72-76 MHz frequencies.

The frequency or frequencies would be selected, first, in light of the requirements to protect reception of TV Channels 4 or 5 and the Instrument Landing Systems (ILSs) employing 75 MHz marker beacons.[5] Further, a frequency or frequencies would be selected so as to protect existing Part 90 users of the low power frequencies.

Inner Ear will work with all appropriate industry frequency coordinators, per Rule Section 90.175, to ensure that its operations will not cause interference to existing systems. Co-channel operation with any authorized facility in the area will be avoided and all first-adjacent-channel authorized users in the area will be notified well in advance of the proposed use. Further, any frequency to be used will be monitored for at least one day prior to its proposed use to make sure that it is "clear" of authorized users, and test transmissions will be made for a short period prior to actual use during an event. The test transmissions will contain station identification, the nature of the operation and a telephone contact number. If the test

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[5] The FAA uses the frequency 75.0 MHz for low-power marker beacons to provide an indication to pilots of position during an Instrument Landing System (ILS) guided approach to an airport.

transmissions are heard by other active users of the same frequency in the area, that frequency would not be used.

Additionally, upon arrival at a particular location, a survey would be conducted to identify other users of mobile radio communications equipment and their respective frequencies and areas of operation. For example, in a golf tournament, this would include officials, grounds personnel, catering personnel and broadcasters covering the event. Continuous monitoring of those frequencies would be conducted via programmable scanners. Moreover, engineering personnel will be present to correct any technical malfunction of transmission equipment. Any interference or frequency coordination problems which may arise with other users will be promptly handled on site by Inner Ear's engineers.

III. DEMAND FOR THE ONE-ON-ONE SERVICE

A. Results of the Experiments.

As previously stated, Inner Ear's experimental operations have been very successful from the technical as well as from the consumer acceptance standpoints. Surveys taken at the various events where the One-On-One service was offered showed that the spectators extensively used the system and felt that they had benefited from the information they received from the system during the events. Surveys demonstrated overwhelming support for the One-On-One system and a desire to have the system permanently

offered at sporting events.[6] Attached to this petition, as Exhibit I, are sample copies of the result of the surveys.

B. Public Interest.

The public interest will be well-served by the Commission's initiation of a rulemaking proceeding proposing to make available the low power frequencies in the 72-76 MHz band in the Business Radio Service for the limited purpose of transmitting information to individual attendees in sports or other public events for the following reasons.

1. Education/Entertainment of the Public.

As discussed above, Inner Ear's system has been well-received by spectators at sporting events. The system will provide information and entertaining material to spectators at sporting and other events and will enhance their enjoyment and understanding of those events. At golf tournaments, for example,

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[6] The last question on the survey was, "If you could add one thing or make one comment about our product or broadcast, what would that be?" Various responses included:

"Big advantage in having one,"

"Great idea,"

"Most helpful and informative--added to overall enjoyment of seeing stars in action,"

"Much more enjoyable--never would have come back second day,"

"It was great, it will keep me here at the course on Sunday instead of in front of the T.V.,"

"It is so compact and handy," and

"Excellent reception and I think the units are terrific."

fans, who are frequently frustrated when they are viewing the tournament from one vantage point and hear loud cheers from another, would now be able to have current information on the occurrence in that other area. Spectators at horse races, who are often bored by the lengthy intervals between races, would be able to receive material regarding the next race including odds, the records of the horses and their jockeys, or horse racing in general. Further, spectators attending one event can obtain information on other events occurring simultaneously, especially in on-going tournaments.

In sum, the Inner Ear system offers a new and unique information service to individual spectators. That information increases the enjoyment of the event by the spectators and availability of this service may well increase spectator attendance at sporting events.

2. A New Service Will be Established

While some attempts at somewhat dissimilar services from a technical standpoint have been made in the past,[7] none of them

---

[7] Inner Ear has researched the matters and has found that previous efforts to provide spectators or members of an audience with audio information have differed markedly from its proposed system and have not been successful. For example, such efforts have included the use of a loop antenna surrounding a seating area or a strip antenna positioned within a seating area from which spectators would pick up radio signals through the use of an earpiece receiver. However, such methods turned out to be expensive, require the installation of hard wire antenna equipment, and can be used only for the finite area. By contrast, the Inner Ear system is mobile and, through use of inexpensive receivers, can be offered economically to all spectators.

employed the concepts and technology offered by the One-On-One system. That system is truly unique. Further, the timing circuit, reset switch, and battery monitors used in the Inner Ear receivers are novel. Development of these receivers has advanced the state-of-the-art in radio equipment. Access to the One-On-One service will provide a novel as well as beneficial use of the spectrum.

3. No Public Detriment.

As discussed above, there are substantial public benefits to Inner Ear's proposal, but no public detriments. The frequency coordination and other procedures will assure that Inner Ear's operations will not interfere with other Part 90 operations, with Channels 4 or 5 television reception, or with ILS use of 75 MHz. In short, there will be no significant interference problems to existing licensees or to future licensees in any parts of the spectrum that would arise from allocation of the low power 72-76 MHz band frequencies for use in the Business Radio Service for the One-On-One service. That the public would benefit from the full development of such a system is not open to question.

IV. PROPOSED RULE AMENDMENTS.

The proposed amendments to Part 90 of the Commission's Rules are set forth in the Appendix. Inner Ear proposes amendment of Rule Section 90.75(b) and (c) to add the 72-76 MHz low power mobile frequencies to the Business Radio Service frequency table. A new Section 90.75(c)(45) would be added to include the limitations on use of these frequencies, and to specify that the

frequencies are shared with the Manufacturers, Forest Products, Special Industrial, Railroad, and Fire Radio Services.

Section 90.21(c)(19) of the Fire Radio Service, Section 90.67(c)(34) of the Forest Products Radio Service, Section 90.73(d)(7) of the Special Industrial Radio Service, Section 90.79(d)(4) of the Manufacturer's Radio Service, and Section 90.91(c)(2) of the Railroad Radio Service Rules would be amended to indicate that the same frequencies would be shared with the Business Radio Service.[8]

Section 90.257(b), regarding use of the band 72-76 MHz, would also be amended to include the Business Radio Service. Finally, Section 90.257(b)(2) would be amended to provide for a limited exception to the requirement in that rule that the transmitting antennas be directly mounted on the transmitting unit. At times, with the One-On-One system, separation of the transmitting antenna and transmitting unit may be required to accommodate installation variables.

V. CONCLUSION

In light of the extensive and important public interest benefits discussed above, Inner Ear requests that the Commission initiate a rule making proceeding proposing amendment of Part 90 of its rules to incorporate the rule revisions set out in the Appendix hereto that would allocate certain frequencies in the

---

[8] The proposed rule amendments take into account the FCC rules, released May 18, 1993, in PR Docket 92-153, FCC 93-215, that permit the Fire Radio Service to share the 72-76 MHz frequencies pursuant to interservice coordination.

band 72-76 MHz for use in the Business Radio Service for transmissions of information to individuals attending sporting and other public events.

Respectfully submitted,

INNER EAR COMMUNICATIONS, INC.

By: _____
Richard Hildreth
George Petrutsas
Lonna M. Thompson

Its Attorneys

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May 21, 1993
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APPENDIX

Part 90 of Chapter 1 of Title 47 of the Code of Federal Regulations is proposed to be amended as follows:

1. 47 C.F.R. §90.21 is amended by revising paragraph (c)(19) to read as follows:

§90.21 Fire Radio Service

(c) * * *

(19) This frequency is available to the Fire Radio Service for fire call box operations on a shared basis in the Manufacturers, Forest Products, Special Industrial, Railroad, Fire, and Business Radio Services and interservice coordination is required. All communications on this frequency must be conducted by persons or organizations charged with specific fire protection responsibility. All operations on this frequency are subject to the provisions of Section 90.257(b).

2. 47 C.F.R. §90.67 is amended by revising paragraph (c)(34) to read as follows:

§90.67 Forest Products Radio Service

(c) * * *

(34) This frequency is available on a shared basis in the manufacturers, Forest Products, Special Industrial, Railroad, Fire, and Business Radio Services and interservice coordination is required. All communications on this frequency must be conducted within the boundaries of a logging site or confines of a plant, factory, lumber or paper mill. All operations on this frequency are subject to the provisions of §90.257(b).

3. 47 C.F.R. §90.73 is amended by revising paragraph (d)(7) to read as follows:

§90.73 Special Industrial Radio Services

(d) * * *

(7) This frequency is available on a shared basis in the Manufacturers, Forest Products, Special Industrial, Railroad, Fire, and Business Radio Services and interservice coordination is required. All communications must be conducted within the boundaries or confines of a plant, factory, shipyard, mill, mine, farm, ranch, or construction area. All operations on this frequency are subject to the provisions of §90.257(b).

4. 47 C.F.R. §90.75 is amended by revising the Business Radio Service Frequency Table in paragraph (b) to include the

following frequencies to be added immediately following the 72.00 to 76.00 MHz entry, and by adding paragraph (c)(45) to read as follows:

§90.75 Business Radio Service

* * * * *

(b) * * *

Frequency or Band	Class of Station(s)	Limitations
	* * * * *	
72.44	Mobile	45
72.48	do	45
72.52	do	45
72.56	do	45
72.60	do	45
74.61	do	45
74.63	do	45
74.65	do	45
74.67	do	45
74.69	do	45
74.71	do	45
74.73	do	45
74.75	do	45
74.77	do	45
74.79	do	45
75.21	do	45
75.23	do	45
75.25	do	45
75.27	do	45
75.29	do	45
75.31	do	45
75.33	do	45
75.35	do	45
75.37	do	45
75.39	do	45
75.44	do	45
75.48	do	45
75.52	do	45
75.56	do	45
75.60	do	45

* * * * *

(c) * * *

(45) This frequency is available on a shared basis in the Manufacturers, Forest Products, Special Industrial, Railroad, Fire, and Business Radio Services and interservice coordination is required. This frequency may be used only for transmissions directed to spectators of sporting and similar public events of information directly related to the event, including a running

account of the program of the event, within the boundaries or confines of the particular event. All operations on this frequency are subject to the provisions of §90.257(b).

5. 47 C.F.R. §90.79 is amended by revising paragraph (d)(4) as follows:

§90.79 Manufacturers Radio Service

(d) * * *

(4) This frequency is available on a shared basis in the Manufacturers, Forest Products, Special Industrial, Railroad, Fire, and Business Radio Services and interservice coordination is required. All communications must be within the boundaries or confines of plants, mills, yards, or other manufacturing area. All operations on this frequency are subject to the provisions of §90.257(b).

6. 47 C.F.R. §90.91 is amended by revising paragraph (c)(2) as follows:

§90.91 Railroad Radio Service

(c) * * *

(2) This frequency is available on a shared basis in the Manufacturers, Forest Products, Special Industrial, Railroad, Fire, and Business Radio Services and interservice coordination is required. All communications must be within the boundaries or confines of railroad terminals or yards. All operations on this frequency are subject to the provisions of §90.257(b).

7. 47 C.F.R. §90.257 is amended by revising paragraph (b) and paragraph (b)(2) as follows:

§90.257 Assignment and use of frequencies in the band 72-76 MHz.

(b) The following criteria shall govern the authorization and use of frequencies within the band 72-76 MHz by mobile stations in the Special Industrial, Manufacturers, Forest Products, Railroad, Fire, and Business Radio Services.

* * * * *

(2) The maximum transmitter output power that will be authorized is one watt; and each station authorized will be classified and licensed as a mobile station. Any units of such a station, however, may be used to provide the operational functions of a base or fixed station. The antennas of transmitters operating on these frequencies must be directly mounted or installed upon the transmitting unit: Except that when

permanently installed aboard a vehicle, antenna and transmitter may be separated as required for convenience in mounting; and, Except for antennas and transmitters used in the one-on-one transmissions of sporting events, as set forth in §90.75(c)(45), as required to accommodate installation variables. Horizontal polarization will not be allowed; and the gain of antennas employed shall not exceed that of a half-wave dipole. The maximum bandwidth that will be authorized is 20 kHz. Tone control transmissions are permitted.

ENGINEERING STATEMENT

in support of

Petition for Rulemaking

Inner Ear Communications, Inc.

Inner Ear Communications, Inc. (Inner Ear) is petitioning the Commission to institute a rulemaking proceeding looking towards the establishment of a novel aural radio service on specified frequencies in the VHF spectrum between 72 and 76 MHz. This engineering statement has been prepared in support of this petition.

Description of the Service

The proposed service would provide spectators at various types of sporting and other public events with an aural commentary of happenings related to a particular event via a low-power transmitter and personal/pocket radio. Receivers would be rented on a per-event basis to spectators and would include anti-theft circuitry which would prevent the receivers from being used at another, unrelated event. Typical applications include golf tournaments, football games and racing events.

The receivers will be tunable to any of the frequencies listed in the proposed table of frequency allotments. This tuning will be controlled by a preset internal adjustment (jumper or switch) not accessible to the user. However, there are some events where multiple transmitters may be employed in order to provide a multi-

channel service (e.g., multiple languages). In these cases, the receivers employed will be user-tunable to the desired channel.

Experimental System

Inner Ear was issued an Experimental License to operate in the 75 MHz band under the call sign KK2XJR. The license authorized the following operating parameters:

Frequency MHz	Authorized Power (Watts	Emission Designator
72.44, 72.48, 72.52	1 ERP	20K0F3E
72.56, 72.60	1 ERP	20K0F3E
74.61, 74,63, 74.65	1 ERP	20K0F3E
74.67, 74.69, 74.71	1 ERP	20K0F3E
74.73, 74.75, 74.77	1 ERP	20K0F3E
74.79, 75.21, 75.23	1 ERP	20K0F3E
75.25, 75.27, 75.29	1 ERP	20K0F3E
75.31, 75.33, 75.35	1 ERP	20K0F3E
75.37, 75.39, 75.44	1 ERP	20K0F3E
75.48, 75.52, 75.56	1 ERP	20K0F3E
75.60	1 ERP	20K0F3E

Frequency Tolerance: ±0.005%

Operation: In accordance with 5.202(i) & (j) of the Commission's Rules

The 1.0 Watt ERP (1.64 W EIRP) was chosen because it comports with the Commission's limitations on the use of the frequencies 74.61/74.79 and 75.21/75.60 MHz recently allotted for low power mobile use. The proposed occupied bandwidth and modulation also comports with the standard usage on these frequencies.

Inner Ear made studies which determined that a receiver of ordinary sensitivity could be expected to provide the desired quality of service (a SINAD of at least 35 dB) at distances of up to one mile from the 1.0 watt transmitter (allowing up to 25 dB loss for propagation anomalies producing less than free space conditions). A summary of the calculations for a typical scenario is given below:

Transmitter Power EIRP):	32 dBm
Free Space Path Loss (1 mi):	-75 dB
Propagation Losses:	-25 dB
Receive Antenna "Gain":	-10 dBi
Received Power:	-78 dBm
Receiver Sensitivity for 12 dB SINAD:	-107 dBm
For 35 dB SINAD:	-84 dBm (-107 + 35 dB)
Fade Margin:	6 dB [-78 dBm -(-84 dBm)]

Field Test Results

Inner Ear has experienced significant delays in securing the special receivers necessary for its service. While the design has been established for some time, identifying a radio manufacturer has been problematic. The special nature of the receiver and the small quantity of units involved, relatively speaking, has complicated this process.

Thus, Inner Ear was forced to acquire commercial FM broadcast (88-108 MHz) radios and have them modified to operate in the 72-76 MHz band. However, these radios were designed to operate

with a much wider bandwidth signal than the receivers intended for Inner Ear's special service (180 kHz vis a vis 20 kHz). Initial tests were conducted using 180K0F3E modulation under Special Temporary Authority granted by the Commission. These tests included major golf and racing events.

The tests verified the adequacy of the 1 Watt ERP and the assumed propagation characteristics at 75 MHz. All tests were technically successful. While such a situation has not yet to be encountered, it is conceivable that at a physically large venue -- or one that has unusual topography -- it may be necessary to install a second transmitter to provide adequate coverage. (Multiple transmitters may also be required for the multi-channel services mentioned above.)

Tests have also been conducted with prototype receivers based on the 20K0F3E modulation scheme with equally acceptable results.

Frequency Coordination

Inner Ear is proposing to use the frequencies authorized in the KK2XJR Experimental License on a regularly authorized basis. Since its use will be temporary and itinerant, Inner Ear proposes to use the frequency coordination methodology it has developed during the experimental period (during which no complaints of interference were generated).